ATTACHMENT FOR MATTRESS-FILLING MACHINES

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This invention relates to an attachment for mattress-filling machines.

For purposes of the present invention, there is now in general use a conventional type of mattress-filling machine which consists essentially of an adjustable spout. This spout is formed of an upper group of fingers on the underside of which are exposed endless chains. This upper group of fingers is, in turn, opposed by a lower group of fingers on the upper sides of which are exposed endless chains. The mattress-filling material which frequently consists of a spring unit above and below which there are layers of sisal and layers of cotton batting is carried through the spout formed by these upper and lower groups of fingers by endless chains. The filling material is confined at the sides of the spout formed by these groups of fingers by end plates. The fingers of the groups are adjustable with respect to each other so that the spacing therebetween can be varied. In this manner the overall width of the spout can be adjusted to produce either wide mattresses or narrow mattresses. In a similar manner the vertical distance between each group of fingers is adjustable enabling the same machine to fill either thick mattresses or thin mattresses. One such machine of this general type is the machine illustrated in United States Letters Patent No. 2,110,359, issued March 8, 1938, to Joseph W. Droll and Alvis H. Olson.

In using a machine of this character the mattress ticking that is to be filled is applied over the end of the spout formed by these fingers and end plates and as the filling material is carried through the spout in a compressed condition by means of the endless chains it is caused to pass through the spout and into the closed end of the ticking. As the ticking is being filled it is being slowly and continuously withdrawn from its gathered position on the spout. Usually workmen position themselves adjacent each end of the spout and manually retard the withdrawal of the ticking from the spout as it is being filled. To some extent the successful operation of the machine and the proper filling of the ticking is dependent upon the skill or "feel" of these workmen in retarding but still permitting the ticking to be withdrawn from the spout as it is being filled by the filling material. As considerable pressure must be applied manually by these workmen at the sides of the spout applying pressure to the ticking overlying the end plates of the spout, these workmen have little if any opportunity to modify or control the rate at which the top and bottom panels of the ticking are withdrawn from the spout adjacent the centers of the upper and lower groups of fingers. Consequently there is no opportunity of retarding the withdrawal of the top and bottom panels of the ticking. Where relatively wide mattresses are to be filled it has consequently been customary to call upon the services of a third workman who may endeavor to frictionally retard the withdrawal of the top and bottom panels from the spout as the ticking is filled. Where the mattress is a relatively wide mattress this is very difficult to accomplish and furthermore, even when accomplished, an additional variable is applied to the machine, namely, the pressure that may be applied manually by the third workman. If the center portions of the top and bottom panels of the ticking are not frictionally retarded against withdrawal from the spout the filling can be more readily discharged against the closed end of the ticking adjacent the center thereof with the result that the ticking will be improperly filled and will have a round end whereas a square or straight end is desirable.

An object of the present invention is to provide an attachment for mattress-filling machines of this character wherein a plurality of resilient friction-applying fingers are pivotally mounted on the machine above and below the groups of fingers forming the top and bottom of the spout. These resilient fingers can be swung into an operative position to facilitate the application of the ticking to the spout and thereafter they may be swung into an operative position pressing the top and bottom panels of the ticking against the top and bottom groups of fingers forming the spout to impose a constant frictional drag on these panels while the ticking is being filled and being withdrawn from the spout. In this manner the services of the third workman can be avoided and as the frictional drag imposed is constant the varied above referred to is eliminated. Those workmen who manually impose a drag on the sides of the ticking may do so with relation to the drag imposed by the resilient fingers. Consequently the filled ticking will have squared or straight ends as distinguished from the objectionable rounded ends.

A further object of the invention is to provide an attachment having the above mentioned characteristics wherein the pressure and consequently the drag can be varied, it being understood that the friction required to be imposed adjacent the centers of the top and bottom panels may vary with different types of ticking materials employed.

Still another object of the invention is to provide an attachment having the above mentioned characteristics which is adjustable as to width so that it may be advantageously employed when the spout is relatively narrow as in the manufacture of narrow mattresses, or employed when the spout has been expanded in the manufacture of wide mattresses.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Fig. 1 is a perspective view of a mattress-filling machine illustrating the attachment in applied position thereon, the resilient fingers of the attachment being shown in operative position.

Fig. 2 is a similar view to Fig. 1 but illustrating the fingers in operative position at the start of the filling of a ticking.

Fig. 3 is a vertical section taken substantially upon the line 3—3 upon Fig. 1 in the direction indicated.

Fig. 4 is a horizontal section taken substantially upon the line 4—4 upon Fig. 3;

Fig. 5 is a sectional view taken substantially upon the line 5—5 upon Fig. 4; and

Figs. 6 and 7 are vertical sections taken upon the lines 6—6 and 7—7, respectively, upon Fig. 5.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the present attachment is designed to be applied to a conventional form of mattress-filling machines. Such machines have a spout like that shown above indicated at 10 through which the mattress filling is forced in a compressed condition into a ticking T that is applied over the outside of the spout. The spout 10 is generally defined by the upper group of fingers 11 and a lower
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group of fingers 12. On the inner or opposed sides of these fingers there are movable endless chains 13 and 14 (see Fig. 3) which carry the filling F in a compressed condition through the spout and into the ticking. The ends of the spout are defined by end plates 15. The groups 11 and 12 are vertically adjustable relatively to each other so that the thickness of the spout can be varied. Likewise the fingers of the groups 11 and 12 are laterally separable so that the overall width of the spout between the end plates 15 can be varied. The details of construction of the manner in which the endless chains 13 and 14 are driven and the manner in which the adjustments of the spout can be accomplished form parts of the conventional machine and consequently they have not been illustrated herein in detail as they form no part of the present invention.

The present invention consists of an attachment comprising an upper pair of angle irons or the equivalent indicated at 16 and 17 (see Fig. 4) which provide bearings for pivots 18 and 19 that are adjustable mounted on the underside of the spout. The pivots 18 and 19 serve to pivotally mount the channel 20 for rocking movement about its longitudinal axis. Within the channel there are blocks 22 having studs 23 over which are mounted the end leaves 24. These studs are equipped with washers 25 which, when being loosened, will enable the blocks 22 to slide along the length of the channel to vary the spacing of the leaf springs or resilient fingers 24. When the blocks and fingers 24 have been adjusted the nuts, on being tightened on the studs, clamp the blocks 22 on the underside of flanges 26 at the top of the channel. Each of the leaf springs or resilient fingers is designed to be swung downwardly against the top panel of the ticking T to apply pressure therethrough to the tops of the fingers 11 of the upper group as illustrated in Fig. 2. These fingers are designed to apply a frictional drag to the top panel of the ticking and to this end each of the leaf springs or resilient fingers may have its end covered with a frictional material such as, for example, sections of canvas belting which are riveted to the fingers by rivets 27. It will be noted that the free or trailing ends of the fingers are not connected to each other and consequently these ends engage the ticking independently of each other and each exerts its own frictional drag upon the ticking without being influenced or modified by adjacent fingers. Adjacent the center of the channel there is secured thereon a crank 28 which is pivotally connected to a piston rod 29 on a piston that is reciprocable in the cylinder 30 on a pneumatic ram. The cylinder 30 is pivotally mounted as at 31 on the frame of the machine and is supplied with air under pressure through hoses 32 and 33 from a control valve 34. By operating the control valve the pneumatic ram may be actuated to swing the crank 28 and to lift the leaf springs or resilient fingers 24 from the position shown in Fig. 2 into the position shown in Fig. 1 and in this latter position the ticking T may be applied to the spout.

Hence, the spout in Fig. 2 can be raised by means of nuts or their equivalent indicated at 35 which pivotally support the ends of a channel 36 on which a lower set of leaf springs or resilient fingers 37 are adjustable mounted. This lower channel has a crank 38 rigidly mounted thereon that is pivotally connected to a piston rod 39 of a piston that is reciprocable in a cylinder 40 of a lower pneumatic ram. The cylinder 40 is pivotally mounted on the frame of the machine and is supplied with air pressure from the control valve 34 through hoses 41 and 42. The control valve 34 causes both pneumatic rams to be actuated simultaneously, that is, when the upper set of leaf springs or resilient fingers 24 are swung upwardly to disengage the spout the lower set of leaf springs or resilient fingers is simultaneously swung downwardly to disengage the spout. Conversely, when the control valve causes the upper set of resilient fingers to swing downwardly to engage the ticking T the lower set of fingers 37 will be simultaneously swung upwardly to engage the lower panel of the ticking T that is on the spout. 43 indicates a pressure regulator that is interposed between the source of supply of air pressure and the control valve 34. By adjusting the pressure regulator the force with which the fingers 24 and 37 press against the top and bottom panels of the ticking can be varied. This adjustment may be necessary for different ticking materials. However, once the adjustment is made for a given material no further change in pressure regulation is normally made.

It will be noted that the groups of fingers 24 and 37 are arranged adjacent the center portions of the top and bottom panels of the ticking T, respectively. In the course of filling the mattress the chains 13 and 14 carry the mattress filling F through the spout and against the closed end 44 of the ticking. The fingers 24 and 37 impose a frictional drag on the top and bottom panels of the ticking adjacent the centers thereof, resulting or retarding the removal of these panels from the spout as the ticking is filled. The frictional drag imposed by each finger is independent of the frictional drag imposed by adjacent fingers. As the pressure and frictional drag imposed by these fingers is constant it does not disturb or effect the "feel" under which workmen at the sides of the spout 35 which is against the end plates 15. Consequently the ticking can be filled evenly and uniformly so that the mattress at the end wall 44 will be straight and square and without the objectionable round end.

From the above described construction it will be appreciated that the attachment is a relatively simple construction which may be easily and quickly applied to the machine. The services of a third workman to retard the withdrawal of the top and bottom panels of the ticking from the spout can thus be completely eliminated and the construction is such as not to interfere with the operation performed by the workmen at the sides of the spout opposite the end plates 15.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In combination with a mattress-filling machine wherein there is a spout over which may be applied the ticking to be filled, means for advancing the filling through the spout into the ticking, a plurality of resilient fingers having their free ends connected and independently engageable with the ticking applied over the spout intermediate the side edges of the top and bottom panels of the ticking, and means for swinging said fingers into and out of engagement with the ticking.

2. In combination with a mattress-filling machine wherein there is a spout over which may be applied the ticking to be filled, means for advancing the filling through the spout into the ticking, a plurality of resilient fingers having their free ends unconnected and independently engageable with the ticking applied over the spout intermediate the side edges of the top and bottom panels of the ticking, and means for swinging said fingers into and out of engagement with the ticking.

3. In a mattress-filling machine wherein there is a spout over which a ticking is applied and means for forcing a mattress filling through the spout into the ticking, upper and lower channels pivotally mounted upon the machine, resilient fingers adjustable mounted upon said channels having their free ends connected and independently engageable with the top and bottom of the ticking applied to the spout, and means for simultaneously swinging said fingers into and out of engagement with the ticking.

4. In a mattress-filling machine wherein there is a spout over which a ticking is applied and means for forcing a
mattress filling through the spout into the ticking, upper and lower channels pivotally mounted upon the machines, resilient fingers adjustably mounted upon said channels having their free ends unconnected and independently engageable with the top and bottom of the ticking applied to the spout, pneumatic rams operatively connected to each of said channels, and means including a control valve for supplying said pneumatic rams with air pressure to swing the fingers into and out of engagement with the top and bottom panels of ticking applied over the spout.

5. In a mattress-filling machine wherein there is a spout over which a ticking may be applied and means for carrying filling material through the spout and into the ticking, upper and lower groups of resilient fingers pivotally mounted on the machine above and below the spout respectively, said fingers having their free ends unconnected to each other and independently engageable with the ticking, pneumatic rams operatively connected to said groups of fingers, and means including a control valve and a pressure regulator for supplying said pneumatic rams with air pressure to swing the free ends of the fingers into and out of engagement with the top and bottom panels of ticking applied over the spout.

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